

10/630,357 filed 07/30/2003
Datwani et al.
Reply to Office Action of 11/14/2006

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-74 (canceled)

75. (currently amended) An alignment marked substrate comprising:
a substrate with a surface; ~~and,~~

one or more alignment marks on the surface of the substrate, the one or more alignment marks comprising a substantially water insoluble polymer excipient, and a dye present in an amount sufficient to render the one or more alignment marks substantially opaque, on the surface of the substrate; and

an array of one or more reagents, wherein the array is arranged on the substrate surface in a fixed register with respect to the one or more alignment marks, the one or more alignment marks disposed at a distance from the array.

76. (canceled)

77. (original) The marked substrate of claim 75, wherein the dye is selected from the group consisting of acridine, analine, anthraquinone, arylmethane, azo, diazonium, graphite, indulin, imine, nitro, phthalocyanine, quinone, tetrazolium, thiazole, and xanthene.

78. (original) The marked substrate of claim 75, wherein the polymer selected from the group consisting of polyvinyl, glucan, glycan, polyester, polysaccharide, polycycloalkylene, polyether, and polyanhydride.

79. (original) The marked substrate of claim 75, further comprising a self-assembled monolayer formed at an interface on the substrate surface.

80. (original) The marked substrate of claim 79, wherein the self-assembled monolayer comprises an alkane thiol or a hydroxy-terminal alkane thiol.

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81. (original) The marked substrate of claim 79, further comprising a patterned interface on the substrate surface wherein the self-assembled monolayer is excluded from at least a portion of the patterned interface.

82. (currently amended) A method of applying alignment marks onto reagent array chips, the method comprising:

spotting an array of one or more reagents onto a surface of the chip;

applying an alignment mark composition onto the surface of the chip, wherein the one or more reagents are in a fixed register with the alignment mark composition, the alignment mark composition disposed at a distance from the one or more reagents; and,

drying the reagents and alignment mark composition;

wherein the alignment mark composition forms one or more water insoluble substantially opaque alignment marks when dried on the chip.

83. (original) The method of claim 82, wherein the reagent comprises protein, a nucleic acid, a cytokine, a receptor, a pharmaceutical, a virus, a buffer, a co-factor, a modulator, an inhibitor, an activator, a chemical, or a compound.

84. (original) The method of claim 82, wherein the alignment mark composition is applied concurrent with spotting the reagents.

85. (original) The method of claim 82, wherein the alignment mark composition comprises a non aqueous solvent.

86. (original) The method of claim 82, wherein the alignment mark composition comprises a dye.

87. (original) The method of claim 86, wherein the dye is selected from the group consisting of acridine, analine, anthraquinone, arylmethane, azo, diazonium, graphite, indulin, imine, nitro, phthalocyanine, quinone, tetrazolium, thiazole, and xanthene.

88. (original) The method of claim 87, wherein the dye is present in an amount ranging from about 1 weight percent to about 20 weight percent of the total composition.

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89. (original) The method of claim 88, wherein the dye is present in an amount ranging from about 3 weight percent to about 15 weight percent of the total composition.

90. (original) The method of claim 89, wherein the dye is present at about 10 weight percent of the total composition.

91. (original) The method of claim 82, wherein the alignment mark composition comprises a polymer excipient.

92. (original) The method of claim 91, wherein the polymer selected from the group consisting of polyvinyl, glucan, glycan, polyester, polysaccharide, polycycloalkylene, polyether, and polyanhydride.

93. (original) The method of claim 92, wherein the polymer is present in an amount ranging from about 0.5 weight percent to about 10 weight percent of the total composition.

94. (original) The method of claim 93, wherein the polymer is present in an amount ranging from about 1 weight percent to about 5 weight percent of the total composition.

95. (original) The method of claim 94, wherein the polymer is present at about 2 weight percent of the total composition.

96. (currently amended) A method of fabricating and using an alignment marked chip ~~The method of claim 82, further the method comprising:~~
spotting an array of one or more reagents onto a surface of the chip;
applying an alignment mark composition onto the surface of the chip, wherein the one or more reagents are in a fixed register with the alignment mark composition, the alignment mark composition disposed at a distance from the one or more reagents;
drying the reagents and alignment mark composition, wherein the alignment mark composition forms one or more water insoluble substantially opaque alignment marks when dried on the chip; and
aligning a collector with reference to one or more alignment marks;

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dissolving one or more dried reagents with a solvent; and,
collecting the dissolved reagents from the chip with the collector;
thereby recovering one or more reagents from the chip.

97. (currently amended) The method of claim 96, wherein the steps of spotting, applying, drying, aligning, dissolving, collecting, ~~or transferring~~ are carried out using an automated instrument.

98. (original) The method of claim 96, wherein the solvent comprises DMSO, DMF, alcohols, or acetonitrile.

99. (original) The method of claim 96, wherein the surface comprises a self-assembled monolayer formed at one or more interfaces.

100. (original) The method of claim 99, wherein the self-assembled monolayer comprises an alkane thiol or a hydroxy-terminal alkane thiol.

101. (original) The method of claim 99, further comprising a patterned region on the chip surface wherein the self-assembled monolayer is formed and an unpatterned region wherein the self-assembled monolayer is excluded from at least a portion of the unpatterned region.

102. (original) The array chip of claim 101, further comprising a second self-assembled monolayer formed in the unpatterned region and substantially excluded from the patterned region.